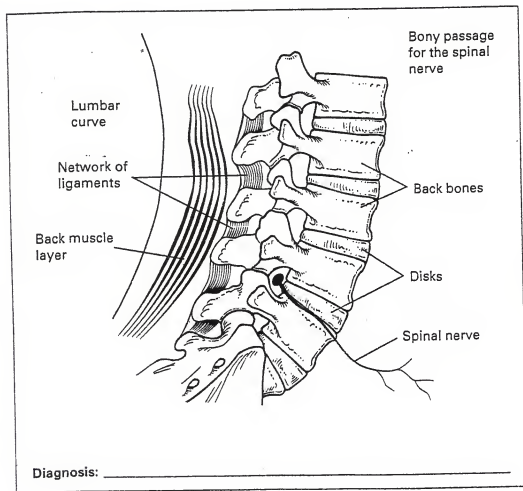


GENERAL CARE OF THE BACK

Anatomy The lower back (lumbosacral spine) consists of five back bones (vertebra) connected together by a network of ligaments and muscles, all of which protect the spinal cord and spinal nerves. Five pairs of spinal nerves exit the spinal column and travel down the back through the pelvis and buttocks and into the lower leg. Each nerve passes by one of the spinal disks and through a bony passage formed by two adjacent back bones.

Conditions Back problems are exceedingly common. Everyone will develop some degree of arthritis and at least one episode of low back strain. Poor posture, excessive weight, lack of exercise, and improper lifting all contribute to acute lumbar strain. Some patients develop symptoms down into the leg from a pinched nerve. The most common cause of a pinched nerve in the lower back is a herniated disk.

Physical Therapy Physical therapy is essential to the treatment, rehabilitation, and prevention of low back conditions.



PHYSICAL THERAPY SUMMARY

1. Heat and massage
2. Cold for acute muscle spasm
3. Stretching exercises
4. Aerobic exercises (e.g., walking, swimming, cross-country ski machine)
5. Strengthening exercises
6. Vertical stretching
7. Ultrasound
8. Lumbar traction in bed
9. Chiropractic manipulation

FIRST FEW DAYS/WEEKS Cold, heat, massage, and gentle stretching exercises are used to treat the acute low back muscle irritation and spasm.

Cold, heat, or cold alternating with heat are effective in reducing pain and muscle spasm. Some patients respond to one better than another. A bag of frozen corn, an iced towel from the freezer, or an ice pack should be left in place for 15 to 20 minutes three to four times a day. Moist heat is preferred and is used similarly.

Massage of the lower back muscles is effective in reducing muscle spasm. This should always be performed on a comfortable surface while lying on the stomach. Hand pressure or pressure from an electric vibrator is applied from the lower rib cage to the top of the pelvis. Up-and-down and circular motions are performed on either side. This is especially effective just before going to bed.

Low back muscle *stretching exercises* are performed to restore lost flexibility. These exercises are especially important for patients suffering from scoliosis, compressed vertebra, or other structural back disorders. Side bends, knee-chest pulls, and pelvic rocks are designed to stretch the lower back muscles, the buttock muscles, and the sacroiliac joints (p. 153). These are begun after the most intense muscle spasms have resolved (usually days!). Initially, these should be performed in bed while lying down. As the pain and muscle spasm improves, stretching can be performed in the standing position. Sets of 20 of each exercise are performed to the point of mild muscular aching. Any sharp pain or any electric-like or shooting pain down the leg may be a sign of nerve irritation or overstretching!

Ultrasound treatments are used in selected cases. These require a physical therapist or chiropractor to administer. The device causes a vibration-like feeling but is actually heating the deep tissues. *Diathermy* is another special heat machine that provides deep heating. Both are used for difficult-to-treat muscle spasms. Patients with a herniated disk should avoid these treatments.

Chiropractic manipulation is an effective alternative to home physical therapy. Realignment by adjustment of the spinal elements has been shown to provide temporary benefit for acute lumbar strain. It is not appropriate to consider chiropractic treatments if there has been or there is serious consideration of a compression fracture, disk herniation, or disease of the bones of the back!

Patients failing to respond to the aforementioned acute treatments may require in-hospital *lumbar traction*. This type of treatment is rarely used today. Only the resistant cases of severe lower back muscle spasm would qualify. Several days of pelvic traction at 20 to 25 lb are combined with intense use of a strong muscle relaxant and narcotic medications.

RECOVERY/REHABILITATION Increasing degrees of stretching exercises are combined with toning exercises, aerobic exercises, and vertical traction to continue the recovery process and prevent a recurrence. These exercises are begun around 3 to 4 weeks after the acute symptoms have resolved.

Toning exercises of the abdominal and lower back muscles consist of modified sit-ups, weighted side bends, and gentle extension exercises (p. 156). These are always performed after heating and stretching (see later).

BACK STRETCHING EXERCISES

Back stretching exercises play a vital role in the treatment of lumbosacral muscle spasms. The lower back is heated for 15 to 20 minutes. Sets of 10 to 20 stretches, each held for 5 seconds, are performed on each side. The muscles are kept relaxed. Rest for 1 to 2 minutes between exercises. Mild muscle soreness is expected. Severe pain, electric-like sharp pain, or severe muscle spasms suggest overstretching.



Knee-Chest Pulls

Bring the knee slowly up to the chest, holding it in place with the hands. Relax the buttock and back muscles. Do the left side, then the right side, and then both simultaneously (curling up in the fetal position).

Pelvic Rocks

With the knees bent, the pelvis is rotated forward and then backward. The abdominal muscles do the work as the back muscles are relaxed.

CAUTION: do not overextend when arching the back!



Side Bending

While lying down, crawl your fingers down the side of your thigh. Hold in this tilted position for 5 seconds. Return to a neutral position. Repeat on the other side.

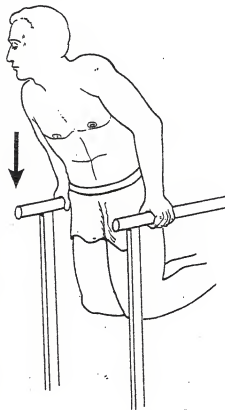
Initially, these should be performed while lying or while floating in the bath or hot tub. With improvement, these exercises can be performed standing or sitting. Follow these movements with exercises to strengthen the back (p.156).

Aerobic exercises are one of the best ways to prevent recurrent back strain. General toning of the body improves posture, muscular support, and flexibility. Swimming and cross-country ski machine work-outs are probably the best overall exercises that will not aggravate the back. Swimming, in particular, is an excellent way to recover lost muscular tone and function after a herniated disk, compression fracture, or spinal surgery. Fast walking and light jogging are acceptable forms of exercises also. Exercise apparatus that places excessive bend or torque in the back should be avoided.

Vertical traction can be used at home as a part of a comprehensive back treatment program (see below). The weight of the lower body and legs is used to pull the lumbar segments apart. Leaning against a countertop, suspending the body between two bar stools, or using inversion equipment for 1 to 3 minutes at a time will allow the back bones, ligaments, and muscles to gradually stretch out. Several vertical stretches are performed each day. It is extremely important to relax the whole lower body when performing this exercise and to slowly return to full weightbearing by lowering down to the legs very gradually.

ADVANCED BACK STRETCHING EXERCISES

This exercise is not appropriate for everyone. A strong upper body is a prerequisite as well as a 2 to 4 week period of basic back exercises (see pp. 153-156). The vertical stretch elongates the support ligaments, lengthens the back muscles, and allows the back bones to pull apart and realign. (I refer to this exercise as "the poor man's chiropractic adjustment.") Suspension between parallel bars is ideal, but any method to allow the weight of the legs to pull down on the back will work (e.g., leaning on a countertop, crutches, supporting your weight between two bar stools).



Vertical Stretch Exercise

Starting in a standing position, the weight of the body is gradually shifted to the outstretched arms. The toes are kept on the ground for balance. The back muscles should be relaxed. Allow the weight of the legs to draw-pull out the lower back bones. Popping sensations or a gentle sensation of stretch should be felt in the lower back. Additional pull occurs if you lean forward slowly. Hold this position for 30 to 60 seconds. Gradually shift the weight back to the legs and then stand up straight. Repeat once or twice. This exercise is especially helpful before going to bed.

This is a great way to keep the back limber and the back muscles supple. This exercise can be performed daily to prevent recurrent back strain.

For chronic cases that do not respond to traditional physical therapy, a transcutaneous electric nerve stimulator (TENS) unit can be tried along with a thorough evaluation by a pain clinic.

Activity Limitations These positions and activities place excessive load or torque on the muscles, ligaments, and bones of the back:

- Lifting heavy objects
- Lifting objects away from the body (the arms held out)
- Lifting in a twisted position
- Working in a stooped position
- Bending excessively at the waist
- No full sit-ups
- No bending over to touch the toes (at least in the recovery period)
- Avoid the rowing machine, heavy weightlifting, or any apparatus that either puts too much bend, torque, or pressure into the lower back

Good Body Mechanics These positions and activities are safest and reduce the possibility of reinjuring the muscles and ligaments:

- Sitting and standing up straight
- Lifting with the legs and knees
- Lifting and carrying weight close to the body
- Lifting using an external lumbar support
- Sleeping on a firm mattress with a pillow under the knees
- Keep the weight down
- Wear seat belts and purchase a car with an air bag
- Low weight, high repetition weightlifting
- Swimming, cross-country ski machine (with low tension arm setting to avoid back twisting or torque), a soft platform treadmill, or fast walking

Precautions Stretching and toning exercises should always be started gradually. If any sharp pain or electric-like pain or shooting pains down the leg occur, the exercises will have to be stopped. These symptoms suggest nerve irritation!

Ultrasound treatments should be avoided in patients with herniated disks. Deep heating may cause the disk to swell further!

Chiropractic manipulation must be avoided with bony compression fractures, disk herniations, and disease of the back bones!

Vertical traction must be used with caution. You must possess strong upper body strength and be free of cardiovascular disease (blood can pool in the legs and lead to fainting). Your health care provider should be contacted before starting this type of aggressive stretching.

BACK STRENGTHENING EXERCISES

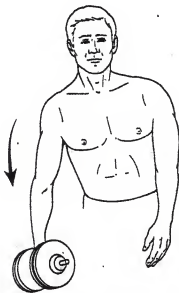
Before starting a strengthening program for the back, flexibility must be restored with 3 to 6 weeks of daily back stretching. Strengthening exercises should be performed when the body is well rested. First, the back muscles are stretched out for 5 to 10 minutes (see p. 153). Then, sets of 15 to 20 of the following are performed daily for 6 weeks. As the strength of the back increases, the frequency can be reduced to three times a week.

**Modified Sit-ups**

The knees are kept bent. The lower back is kept flush with the ground. The hands can be kept either behind the neck or held over the chest. The head and neck are raised 3 to 4" and held for 5 seconds. The abdominal muscles will gradually strengthen.

Weighted Side-bends

In a standing position, a 5 to 15 lb weight is held in the hand. The back is tilted to the weighted side and is immediately brought back to center. The back needs to be tilted only a few inches! The farther away from the body the weight is held, the greater is the amount of muscle work! After a set of 15 to 20, the weight is switched to the opposite side.



These specific exercises are complementary to a regular aerobic exercise program. No single exercise is better than another. If you are having problems doing any specific exercise, discuss it with your health care provider.